

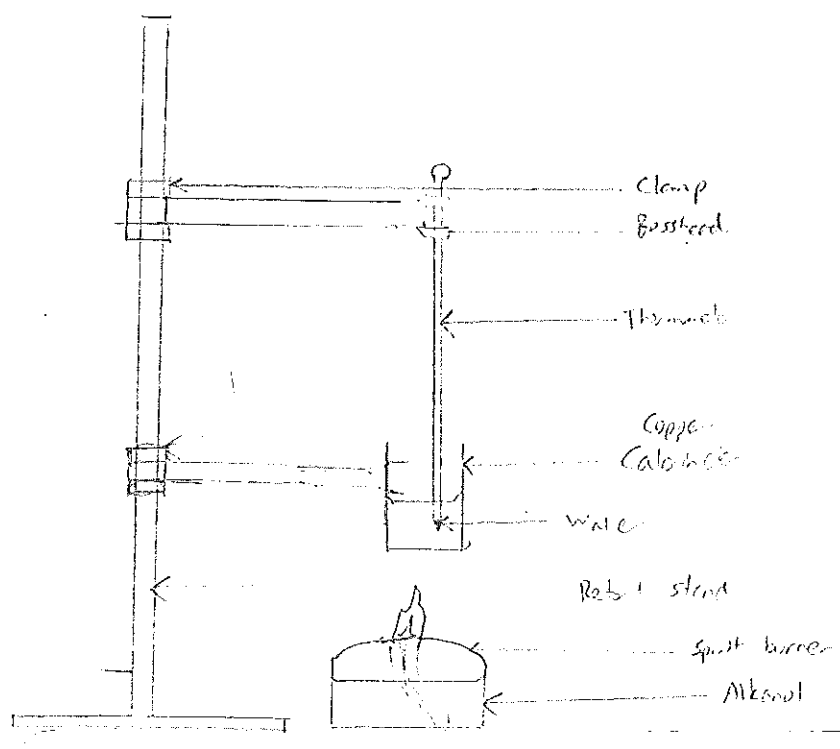
are constantly different. Therefore poor validity was expected - simply because the difference in temperature of the water is a highly inaccurate way to determine the energy output. It was inaccurate as most energy output was absorbed by the calorimeter or the surroundings.

Also, accuracy-wise, the number of significant figures available for the equipment would make a minimal difference.

4. Suggest improvements to help reduce this error.

Either a bomb calorimeter so more energy is directed to the dependent variable, or also measure the amount of heat absorbed by the calorimeter.

5. Draw a diagram of the experimental apparatus set up.



Balance is not used be directly related result report error. The weight then
 standard is that it is important.

For every 100g of water, the error in the (100g) value of the weight is 0.1g. Reliability of the results is 0.1%.

unreliable. In terms of accuracy, the investigation produced results that were far less than the data book values for Act 1. This inaccuracy

can be mainly attributed to the random errors associated with heat losses to the surrounding air and equipment, as any systematic errors with the balance or thermometer can be ruled out

as unlikely. Although the heat lost into the metal of the copper calorimeter may be considered systematic (not really) as its S.P.C. can be known, the results are also largely

unreliable due to the multitude of random errors in the data (the mass values affected by the relative heat losses to the equipment. REs with reading the thermometer only impact on accuracy since someone else would still record the same ΔT (same for both water) - only REs in collected data impact reliability. It was also quite valid since all variables were controlled within reason to provide a test of the aim.

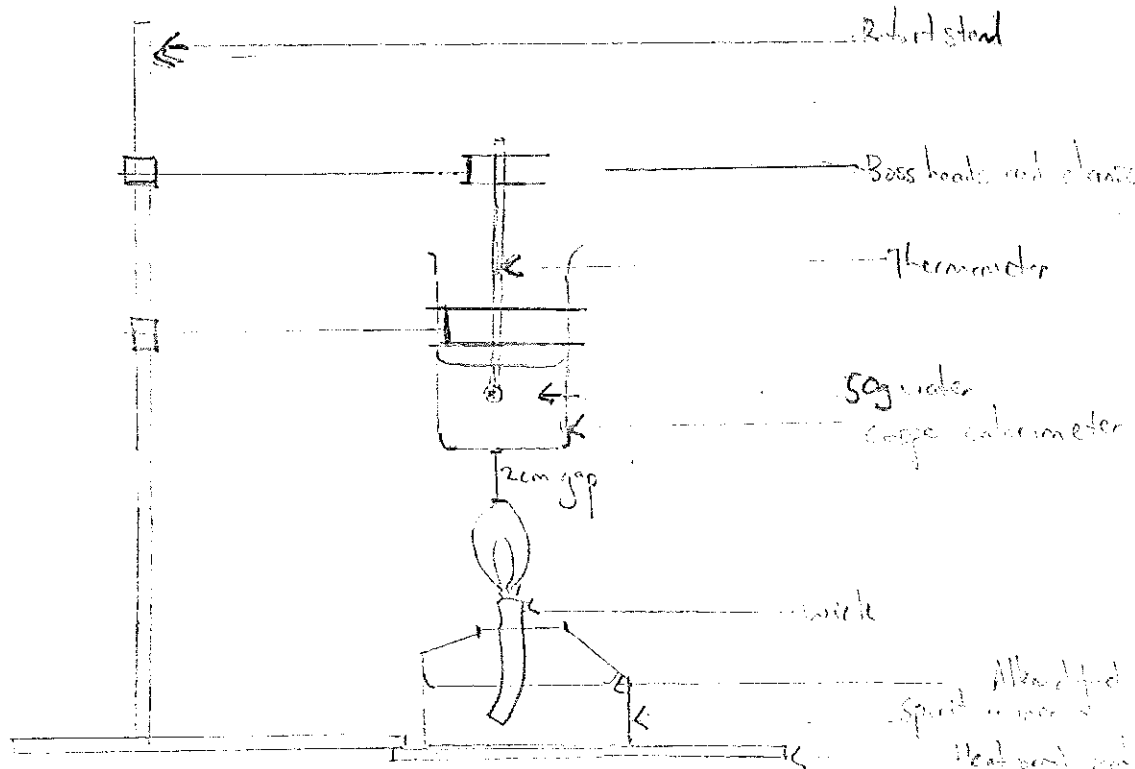
4. Suggest improvements to help reduce this error.

If using the same equipment, no more can be done other than to make sure that environmental conditions stay constant, and that random

reading errors are minimized. Also, minimizing the time that the spirit is burning for may help to minimize heat losses, other wise a more accurate calorimeter

5. Draw a diagram of the experimental apparatus set up.

copper calorimeter apparatus for the determination of the ΔH_c .



* the relative heat losses to the equip (RE) may have resulted in less/more heat reaching the water, so it may have taken longer for the required ΔT to occur, meaning in which time the more fuel will have 60g combusted (which are the mass values)

* the relative heat losses to the different parts of the set up is a random error, not an uncontrolled variable (the env. stays constant)

* A prac is valid if the results obtained reflect an experiment that tested the aim (but still may be v. inaccurate)

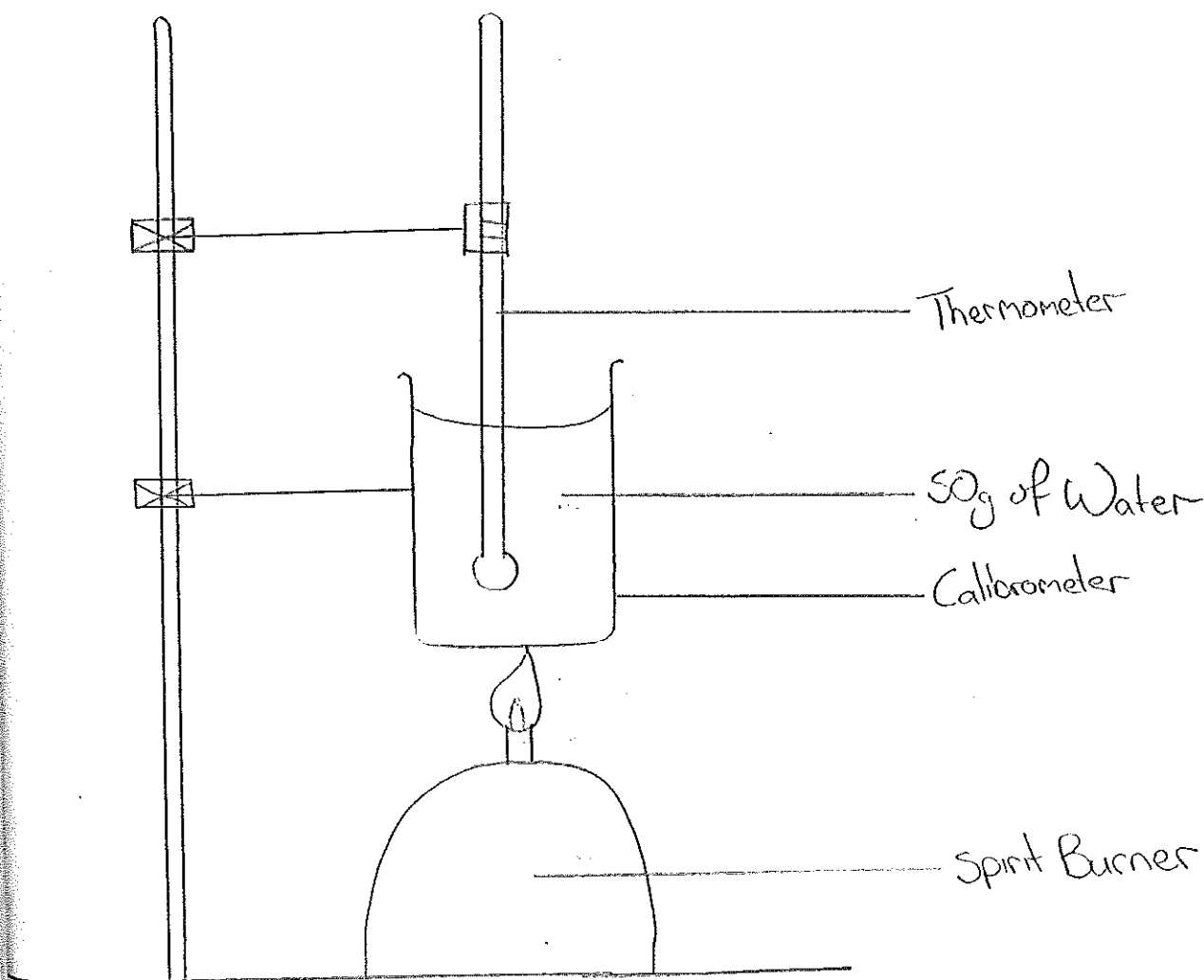
* as long as the experimental design had its variables in check to test the

- Bomb calorimeter (Heat lost to surroundings)
 - Incomplete combustion decreased accuracy & reliability
- Repetition of 3 per alcohol was achieved (averaged)
 Reliable is average
 Fairly Valid not very accurate but not reliable.


4. Suggest improvements to help reduce this error.

Using a bomb calorimeter to ensure no heat was lost. Pumping in O_2 to ensure complete combustion occurred. Using distilled water. Stirring to ensure even temp.

5. Draw a diagram of the experimental apparatus set up.




Reliability could have been increased through either repeating the experiment on each altered and obtaining an average. Validity was shown by using 100g of water as a controlled variable, but it could have been improved by controlling all temperature differences. However, the accuracy of the equipment was fairly low, as heat could have been lost to the surroundings, causing the calculation to be inaccurate.

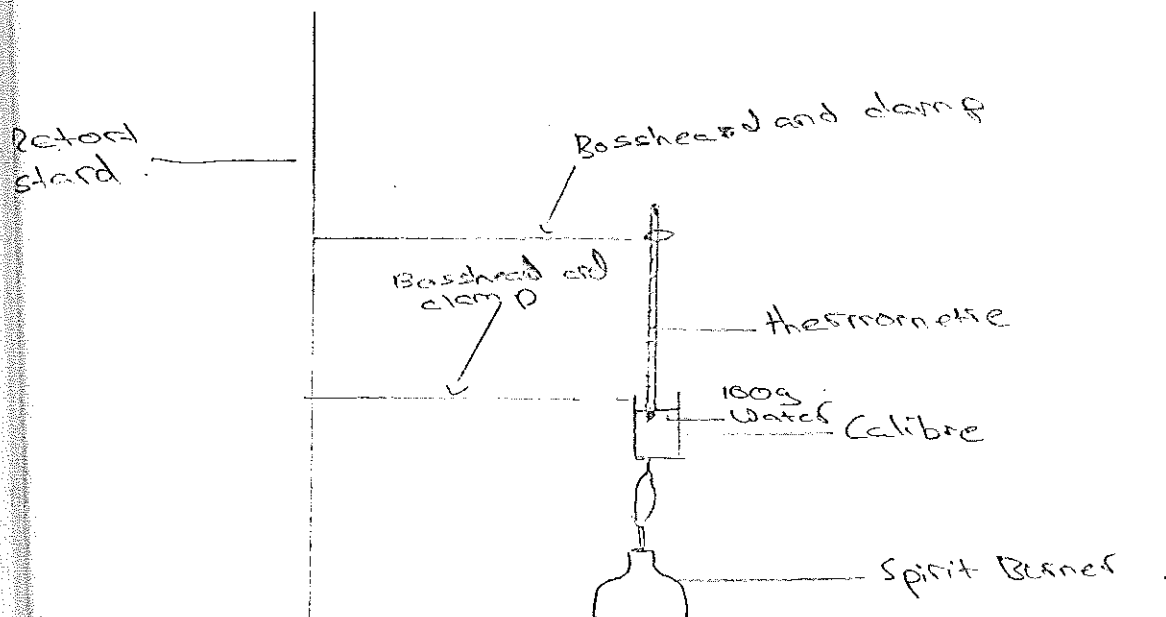
 Suggest improvements to help reduce this error.

- Keep the flame just touching at top of the
calibre and over with heat as much as possible to stop.

Repetition of the experiment:

Make temperature difference of a controlled variable.

 Draw a diagram of the experimental apparatus set up.



4. Suggest improvements to help reduce this error.

5. Draw a diagram of the experimental apparatus set up.

Scientific Diagram

